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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,996	07/05/2006	Itshak Ben Yesha	1500.0022	4324

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The Law Office of Michael E. Kondoudis
888 16th Street, N.W.
Suite 800
Washington, DC 20006

EXAMINER

BEHRINGER, LUTHER G

ART UNIT	PAPER NUMBER
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3766

NOTIFICATION DATE	DELIVERY MODE
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05/19/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

rlynn@mekiplaw.com

Office Action Summary	Application No. 10/596,996	Applicant(s) YESHA, ITSHAK BEN	
	Examiner Luther G. Behringer	Art Unit 3766	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-10 and 12-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-10 and 12-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the communication received on 03/29/2010 concerning application no. 10/596996 filed on 07/05/2006.

Response to Arguments

2. Applicant's arguments filed 03/29/2010 have been fully considered but they are not persuasive. Applicant argues that Miller fails to disclose the type of signals measured, be they horizontal or vertical. As is illustrated by Miller in Figs. 1 and 2, the forces acting on a patient act through that patient's center of gravity. These forces are drawn as vectors and can mathematically be separated into components including horizontal and vertical components. Miller discloses that it is the sum of the component parts of time-dependent respiration and time-dependent cardiac signals that create the varying force on a subjects center of gravity when that subject is moving (Col. 3, ll. 5 – 10; Col. 4, ll. 1 – 11). Miller further discloses the use of multiple sensors in Col. 5, ll. 3 – 7. While Miller is silent regarding the specifics of his net force calculation, the principles behind it are clearly indicated (Col. 2, ll. 49 – 61).

Applicant's argument regarding the separation of the net force into two separate tasks is unpersuasive. As is discussed above, vectors may be mathematically separated into the component horizontal and vertical components to achieve this result, thereby rendering this step a mere separation of the working parts and tasks of the invention.

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Applicant further argues that the case law, *St. Regis Paper Co. VC. Bemis Co.*, 193 USPQ, does not apply to the instant case. However, similarly to the use of multiple layers in the *Regis* case, the use of multiple sensors, as is disclosed by Miller in Col. 5, ll. 3 – 7, would amount to strengthening the principles of the analysis espoused by Miller.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim(s) 12 – 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 12 – 21 are ultimately dependent on canceled claim 11.

5. Claims 12 – 21 are rejected under 35 U.S.C § 112 and it is improper to rely on speculative assumptions regarding the meaning of a claim and then base a rejection under 35 U.S.C. 103 on these assumptions. (*In re Steele* 305 F.2d 859, 134 USPQ 292 (CCPA 1962))

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claim(s) 3, 4, 9, 10, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller (US 5,796,340)** (cited previously).

Regarding **claim(s) 22 and 23**, Miller discloses a system and method for non-invasive monitoring of subject heartbeat rate, said system and method comprised of: collecting vertical pressure signals comprising vertical pressure measurements along time received from at least two sensors located beneath the subject's body at different locations, *in the legs of a bed or crib*; and inherently creating a horizontal signal exhibiting horizontal mass movements over time attributed to the subjects blood circulation; and analyzing the horizontal signal for extracting the subject's heartbeat rate, *calculating net force through the subject's center of gravity* (Col. 2, ll. 49 – 67; Col. 3, ll. 23 – 29).

Further regarding **claim 23**, Miller discloses sensing, using a first pressure sensor, a first vertical pressure applied to the first pressure sensor by the lying subject and outputting a first signal indicative of the sensed first vertical pressure; subtracting the first signal from the second signal to yield a difference signal; and extracting the lying subject's heartbeat rate by analyzing the difference signal, *calculating net force through the subject's center of gravity* (Col. 2, ll. 49 – 67).

8. Miller discloses the claimed invention except for the necessary steps to create the net force signal, *horizontal signal exhibiting horizontal mass movements, etc.* It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide for these steps, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. **Nerwin v. Erlichman**, 168 USPQ 177, 179.

With regard to **claim 3**, Miller discloses the step of identifying the respiration rate (Col. 3, ll. 23 – 29).

Regarding **claim 4**, Miller inherently discloses a system and method further comprising the step of calculating a sum signal comprising the sum of at least two vertical pressure signals and filtering and analyzing the calculated sum signal in combination with the horizontal signal for identifying and detecting the heartbeat rate and respiration rate (Col 2, ll. 49 – 67).

9. Miller is silent as to the second or more vertical pressure signals, but does disclose the use of multiple sensors (Col. 3, ll. 23 – 29). It would have been obvious to a person having ordinary skill in the art at the time of the invention to provide for a second (or more) vertical pressure signal, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

With regard to **claim 9**, Miller discloses at least one sensor is located beneath the lower part of the subject's body and at least one sensor is located beneath the upper part of the subject's body, *sensors incorporated in the legs of a bed or crib* (Col. 3, ll. 23 – 29).

Regarding **claim 10**, Miller discloses wherein the horizontal signal represents the horizontal movements of the subject and the analyzing includes detection of blood circulation (Col. 3, ll. 23 – 29).

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10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller (US 5,796,340)** in view of **Sackner et al. (US 2002/0032386)**(both cited previously).

Regarding **claim 2**, Miller fails to disclose the step of filtering the horizontal signals for reducing background noise and respiratory artifact and other body movements in accordance with predefined signal frequency band values.

However, Sackner et al. teaches the step of filtering the horizontal signals for reducing background noise and respiratory artifact and other body movements in accordance with predefined signal frequency band values (Pg. 12, Paragraph [0114]).

11. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the disclosure of Miller with the step of reducing background noise and respiratory artifact as taught by Sackner et al. since it is well known in the art that doing so would increase the ease and reliability of the interpretation of the data delivered by Millers invention.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller (US 5,796,340)** in view of **Cornish et al. (US 2006/0247543)**(cited previously).

Regarding **claim 6**, Miller fails to disclose the step of calibration for calculating the pre-defined filter signal frequency band values, wherein calibration is based on the FFT algorithm.

However, Cornish et al. teaches comprising the step of calibration for calculating the pre-defined filter signal frequency band values, wherein calibration is based on the FFT algorithm [0092 – 0093].

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13. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the disclosure of Miller with the teachings of Cornish et al. since it is well known in the art that doing so increases the reliability of the invention as disclosed by Miller.

14. Claim(s) 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller (US 5,796,340)** in view of **Porges (US 4,510,944)** (both cited previously).

With regard to **claim 5**, Miller fails to disclose the step of selecting the horizontal signal having the largest integral value of all horizontal signals, wherein the identification and detection of the heartbeat rate is based on said selected horizontal signal.

However, Porges teaches the step of selecting the horizontal signal having the largest integral value of all horizontal signals, wherein the identification and detection of the heartbeat rate is based on said selected horizontal signal (Col. 7, ll. 29 – 40).

15. A person of ordinary skill in the art, upon reading the reference, would have recognized the desirability of providing a peak detector to aid in determining a heart rate. Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify Miller to include a peak detector as taught by Porges, since doing so would aid in the detection of a patients heart rate.

Regarding **claim 7**, Miller fails to disclose wherein the filtering is achieved by a high pass filter, wherein the cut off frequency is twice as a pre-defined heart rate.

However, Porges teaches wherein the filtering is achieved by a high pass filter (Col. 1, ll. 57 – 61), wherein the cut off frequency is twice a pre-defined heart rate (Col. 13, ll. 5 – 15).

16. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the disclosure of Miller with the teachings of Porges since it is well known in the art that doing so increases the reliability of the invention as disclosed by Miller.

17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Miller (US 5,796,340)** in view of **Sackner et al. (US 2002/0032386)** in view of **Porges (US 4,510,944)** (cited previously).

Regarding **claim 8**, Miller in view of Sackner fails to disclose wherein the analyzing includes identifying peak values of the filtered signal.

However, Porges teaches wherein the analyzing includes identifying peak values of the filtered signal (Col. 8, ll. 37 – 41).

18. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the disclosure of Miller in view of Sackner with the teachings of Porges since it is well known in the art that doing so would aid in the reliability of a diagnosis of a patient utilizing the invention as disclosed by Miller in view of Sackner.

Conclusion

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luther G. Behringer whose telephone number is (571)270-3868. The examiner can normally be reached on Mon - Thurs 9:00 - 6:30; 2nd Friday 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Layno can be reached on (571) 272-4949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carl H. Layno/
Supervisory Patent Examiner, Art Unit 3766

/Luther G Behringer/
Examiner, Art Unit 3766